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The effect of filler on mutual compatibility of polymer blend components

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Abstract

Changes in the mutual solubility of polymers, the distribution of filler (aerosil) between polymer phases, and the composition of adsorption layers at the phase interface in a blend of a butadiene-acrylonitrile copolymer with a random ethylene-propylene copolymer and in a blend of the former copolymer with polyethylene were studied. The presence of aerosil and its distribution do not virtually affect the very low mutual solubility of polymers, but change the adhesion between polymer phases of the blends. When aerosil is preliminary added to polyolefin, the filler particles with strongly adsorbed macromolecules of both polymers are formed at the interface between polymer phases. These particles bind the polymer phases and increase the adhesion.